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Special Article - Updating the Experimental Composite Leading Indicator of the Australian Business Cycle: December Quarter 2001

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BACKGROUND

The ABS Experimental Composite Leading Indicator (XCLI) is a single time series designed to provide early signals of turning points in the Australian business cycle. It does not predict the level of GDP or signal recessions or recoveries. Past performance of the XCLI shows it led turning points in the business cycle by between one and six quarters, with the average being around two quarters.

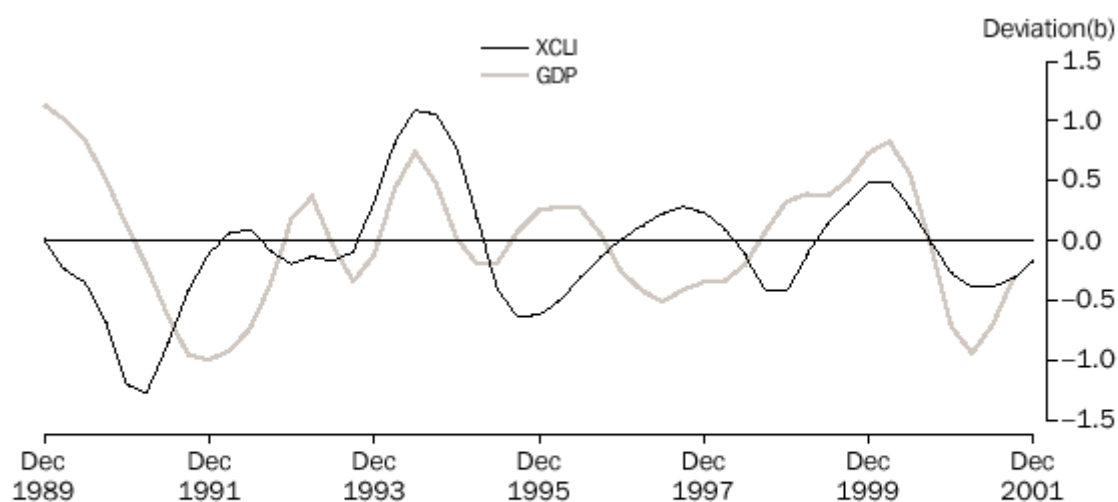
The XCLI has been developed to supplement rather than to compete with existing forms of economic analysis and forecasting. It is published each quarter in Australian Economic Indicators (in the March, June, September and December issues).

MOST RECENT MOVEMENTS

In the December quarter 2001, the XCLI rose for the second quarter (up 0.15 to -0.16). It showed a provisional XCLI turning point at June quarter 2001. Based on historical performance a trough in the GDP business cycle may be expected to emerge several quarters later. However, the GDP business cycle is also exhibiting a trough in June quarter 2001. The XCLI trough was first observed in the December edition of AEI which was published on 30 November 2001, ahead of publication of the September quarter National Accounts on 5 December 2001, when the GDP trough in the June quarter was first observed.

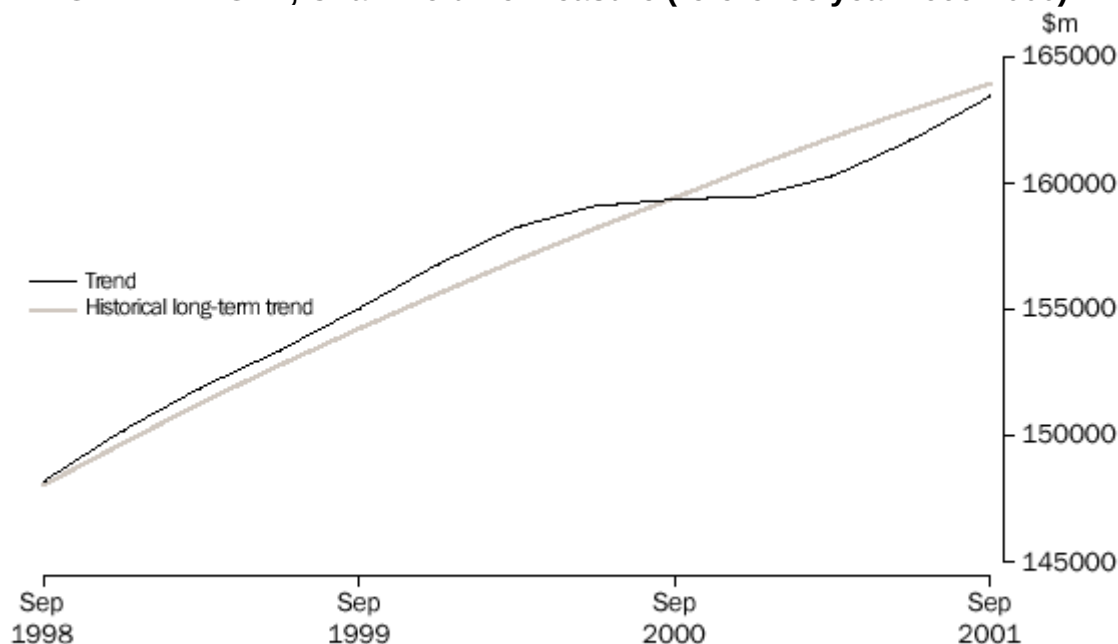
In the December quarter 2001, the largest positive contribution came from the Real Interest Rates component (0.12) while the largest negative contribution to the change in the XCLI came from the United States GDP (-0.13). The United States GDP has made the largest negative contribution for the last two quarters (see table 2).

GRAPH 1. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND ITS TARGET, THE BUSINESS CYCLE IN GDP- Chain volume measure (reference year 1999-2000)(a)



- (a) In the September quarter 2001, the historical long-term trend growth rate of GDP is 0.64% and the trend growth rate is 1.05%.
- (b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless. (see Endnote).

GRAPH 2. GDP, Chain volume measure (reference year 1999-2000)



Source: ABS (Cat. no. 5206.0), Quarterly data

Table 1: XCLI and GDP Chain volume measure (reference year 1999-2000)

	Sep 2000	Dec 2000	Mar 2001	Jun 2001	Sep 2001	Dec 2001
Level						
XCLI	-0.03	-0.27	-0.39	-0.39	-0.31	-0.16
GDP Trend (\$m)	159,310	159,450	160,255	161,708	163,412	n.a.
GDP Long-term trend (\$m)	159,416	160,614	161,773	162,858	163,907	n.a.
GDP Business cycle	-0.07	-0.72	-0.94	-0.71	-0.30	n.a.
Movement from previous quarter						
XCLI (change)	-0.29	-0.23	-0.12	0.00	0.07	0.15

GDP Trend (% change)	0.16	0.09	0.50	0.91	1.05	n.a.
GDP Long-term trend (% change)	0.77	0.75	0.72	0.67	0.64	n.a.
GDP Business cycle (change)	-0.61	-0.66	-0.22	0.23	0.41	n.a.

Table 2: Contributions to quarterly changes in the XCLI

	Sep 2000	Dec 2000	Mar 2001	Jun 2001	Sep 2001	Dec 2001
Trade factor	-0.01	-0.01	0.03	0.06	0.04	0.08
United States GDP	0.00	-0.03	-0.07	-0.11	-0.13	-0.13
Housing Finance Commitments	-0.13	0.00	0.13	0.15	0.10	0.05
Job Vacancies	0.00	-0.07	-0.11	-0.12	-0.07	-0.02
All Industrials Index	0.03	-0.01	-0.04	0.00	-0.04	-0.05
Real interest rate (inverse lagged four quarters)	-0.07	-0.03	0.01	0.04	0.09	0.12
Production expectations (lagged one quarter)	-0.05	-0.07	-0.08	-0.07	0.03	0.08
Business expectations (lagged one quarter)	-0.06	-0.04	0.01	0.05	0.05	0.03
Total XCLI, change from previous quarter	-0.29	-0.23	-0.12	0.00	0.07	0.15

The growth in GDP trend slowed continually from the December quarter 1999 (when it grew by 1.1%) to the December quarter 2000 (0.1%). Since December quarter 2000 GDP has grown for three consecutive quarters at an increasing rate, with growth of 1.1% in the September quarter 2001. The growth of the historical long-term trend was 0.6% in the September quarter 2001.

THE REFERENCE SERIES, GDP

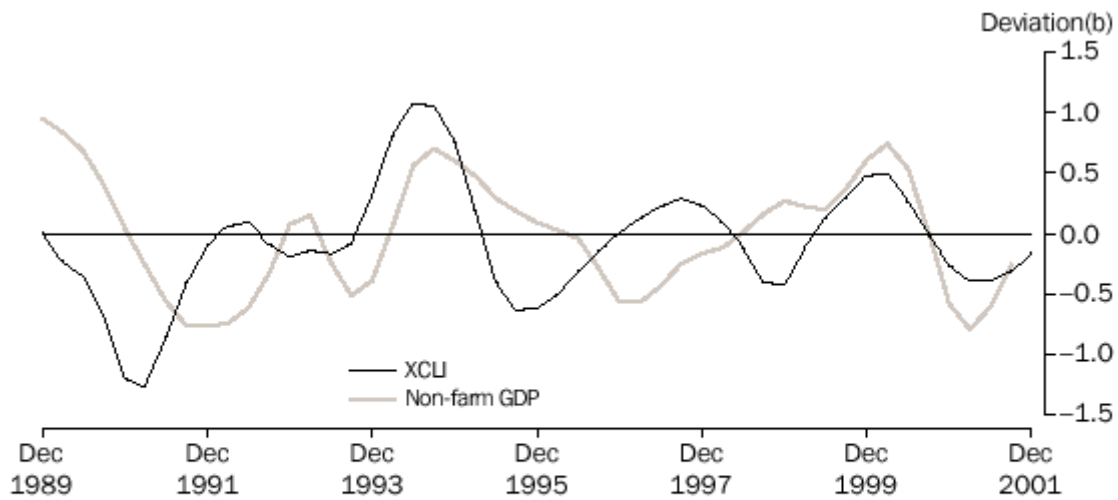
The reference or target series for the XCLI is the GDP business cycle in Australia. The business cycle of a series is defined as the deviation between the trend and the historical long-term trend in the series. Graph 1 shows the business cycles in GDP and the XCLI. Graph 2 shows the level of trend GDP compared with its historical long-term trend. When the trend is below the historical long term trend the GDP business cycle shown in Graph 1 is negative.

AN ALTERNATIVE REFERENCE SERIES, NON-FARM GDP

In the December quarter 1995, there was a peak in the business cycle which the XCLI failed to predict. This peak was largely attributable to the effects of a good farm season. The XCLI does not contain an indicator which leads first order farm product effects. In recognition of this, Graph 3 presents an alternative target series, namely, the business cycle of non-farm GDP, chain volume measure.

The XCLI peaked in the March quarter 2000. Based on historical performance, the non-farm GDP business cycle may have been expected to peak two quarters later. However, the non-farm GDP business cycle also peaked in the March quarter 2000. Likewise, there were coincident troughs in the two series in the June quarter 2001

**GRAPH 3. EXPERIMENTAL COMPOSITE LEADING INDICATOR (XCLI) AND,
THE BUSINESS CYCLE IN NON-FARM GDP-
Chain volume measure (reference year 1999-2000)(a)**



- (a) In the September quarter 2001, the historical long-term trend growth rate of non-farm GDP is 0.65% while the trend growth rate is 1.02%.
- (b) Deviation is the unit of measure for the GDP series and it refers to the deviation of trend from its historical long-term trend. The XCLI series has no official unit of measure, ie it is dimensionless (see Endnote).

ANALYSIS OF COMPONENT INDICATORS

The XCLI summarises the business cycles present in a selection of economic indicators which had typically shown turning points ahead of the business cycle in GDP from the early 1970s to the early 1990s. Because the evolution of each expansion and contraction in activity presents a unique combination of features, none of the individual component indicators has had an unvarying or perfectly stable leading relationship with GDP. However, when combined to form the XCLI their performance as a group is more stable.

In the December quarter 2001, five of the eight components made positive contributions to the quarterly change in the XCLI and three made negative contributions (Table 2 and Graph 4). The XCLI has risen slightly from the previous quarter. Graphs 5 to 12 show each component's trend and historical long-term trend.

Positive contributions. The components making positive contributions to the quarterly change in the December quarter 2001 XCLI were the real interest rate component (0.12, Graph 10), trade factor (0.08, Graph 5), production expectations (0.08, Graph 11), housing finance commitments (0.05, Graph 7) and business expectations (0.03, Graph 12).

Negative contributions. The components making significant negative contributions to the quarterly change in the September quarter 2001 XCLI were US GDP (-0.13, Graph 6), All Industrials Index (-0.05, Graph 9) and the Job Vacancies (-0.02, Graph 8).

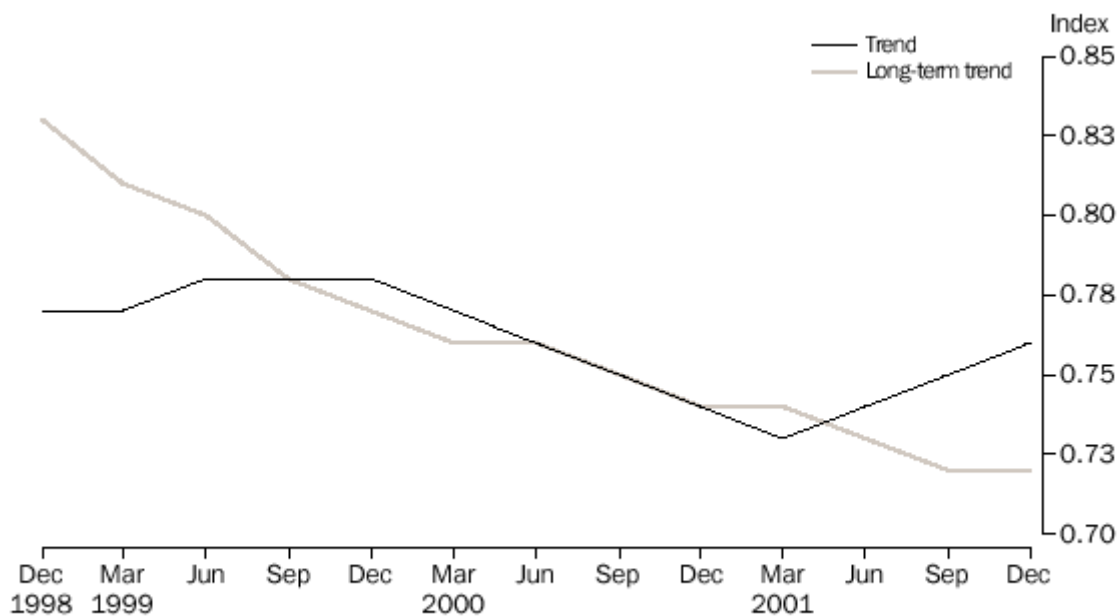
GRAPH 4. CONTRIBUTIONS TO QUARTERLY CHANGES IN THE XCLI



Trade factor

The trade factor is defined as the ratio between commodity prices in terms of Special Drawing Rights and the price index for imported materials used by Australian producers. This ratio gives an early indication of changes in the terms of trade. The trend of the trade factor has risen for the latest four quarters, while the long-term trend's decline has stopped. The trade factor component made a positive contribution (0.08) to the change in the XCLI in the December quarter 2001. If the trend series rises again in the March quarter then the long-term trend series will begin to rise.

GRAPH 5. TRADE FACTOR



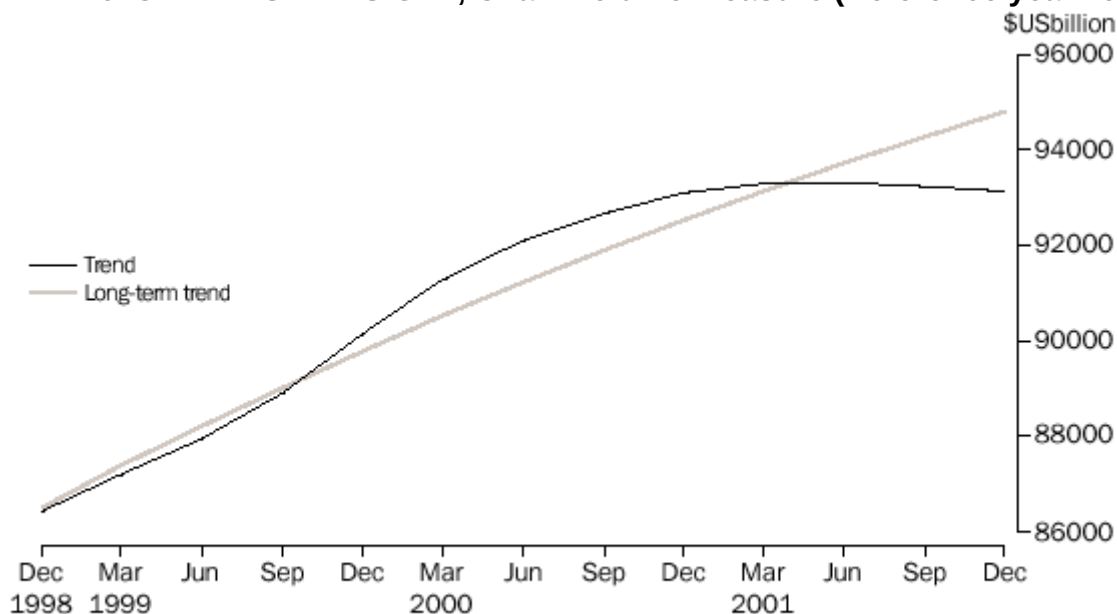
Source: ABS (Cat. no. 6411.0) and RBA Bulletin.

United States GDP

The US GDP component made the largest negative contribution (-0.13) to the change in the XCLI in the December quarter 2001. The trend of the United States GDP fell in the September and December quarters. The rate of growth of the long term trend has decelerated since the

March quarter 1998 and the trend of the US GDP fell below its long-term trend in the March quarter 2001.

GRAPH 6. UNITED STATES GDP, Chain volume measure (Reference year 1996)



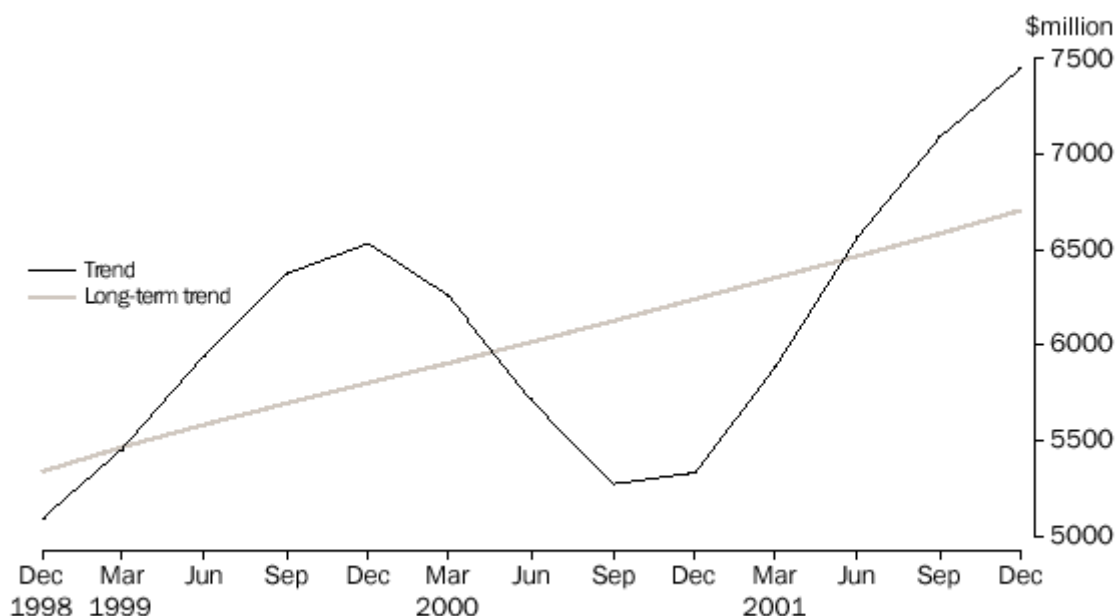
Source: US Bureau of Economic Analysis.

Secured housing finance commitments

The trend of the secured housing finance commitments continued to rise in the September quarter 2001. The historical long-term trend for secured housing finance commitments also continued to rise, but at a lower rate.

Since the trend grew faster than its long-term trend in the December quarter 2001, the secured housing finance commitments component contributed positively (0.05) to the change in the XCLI in the current quarter. This is the fifth successive quarter of positive contribution to the series.

GRAPH 7. SECURED HOUSING FINANCE COMMITMENTS



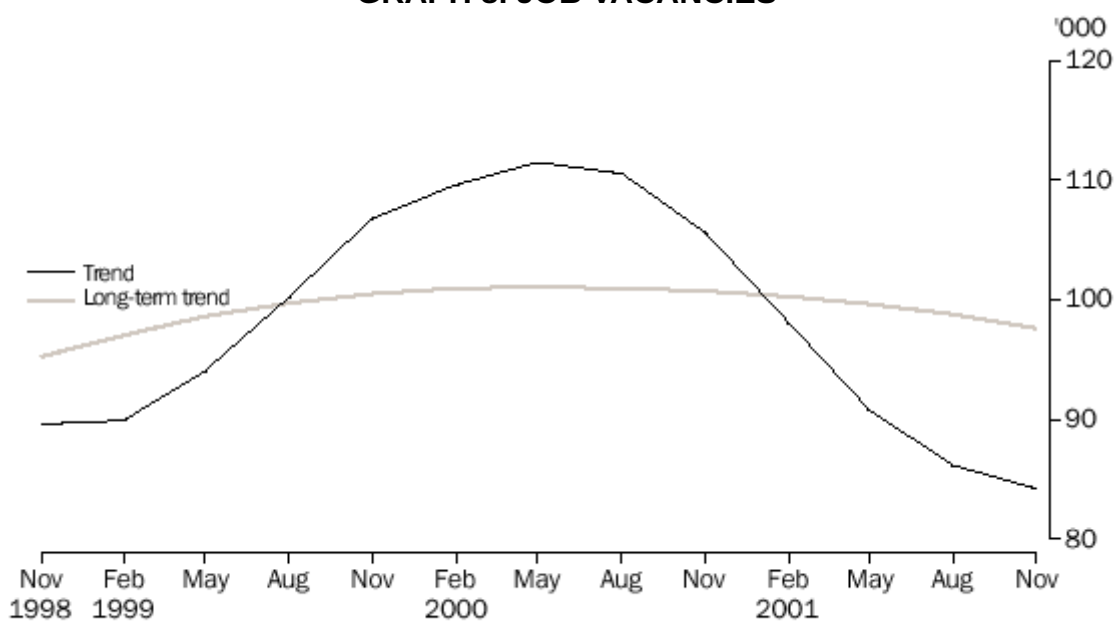
Source: ABS (Cat. no. 5671.0).

Job Vacancies

Note that the job vacancies series are referenced to the middle month of a quarter.

The job vacancies trend has been declining since August 2000 and is below its' long term trend. Although the rate of decline in trend has been slowing since May 2001, it is moving further below the long-term trend which itself has been declining, but at a slower rate, since August 2000. As a consequence job vacancies made a negative contribution (-0.02) to the change in the XCLI in the December quarter 2001.

GRAPH 8. JOB VACANCIES

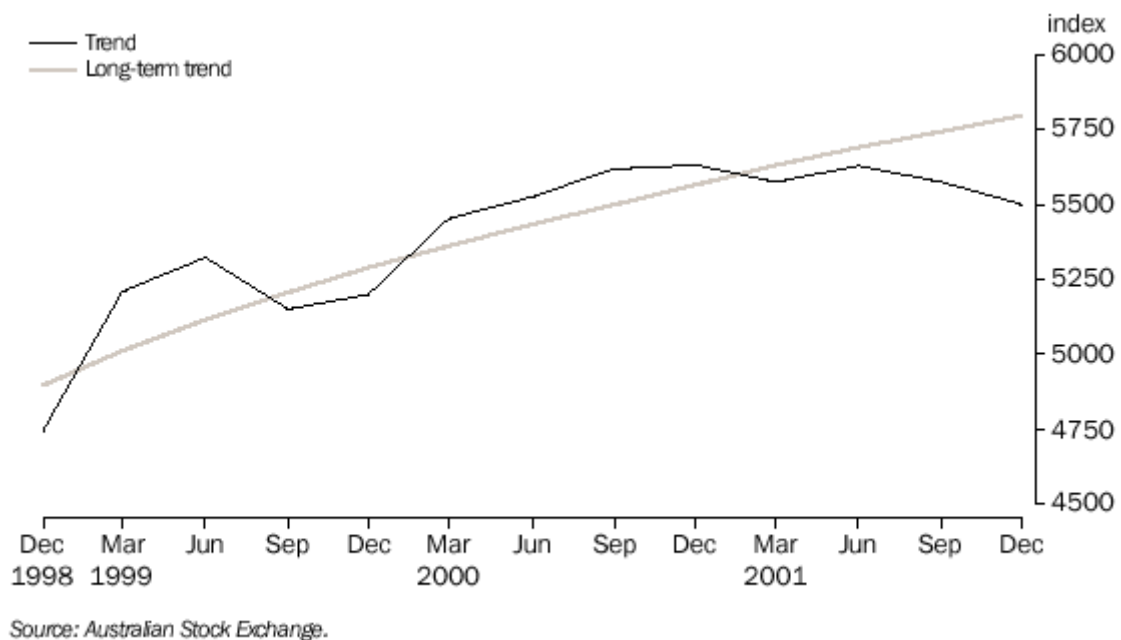


Source: ABS (Cat. no. 6354.0).

All Industrials index

In the December quarter 2001, the trend of the All Industrials Index fell, and its long-term trend continued to rise. Accordingly, the All Industrials Index made a negative contribution (-0.05) to the change in the XCLI in the December quarter 2001.

GRAPH 9. ALL INDUSTRIALS INDEX



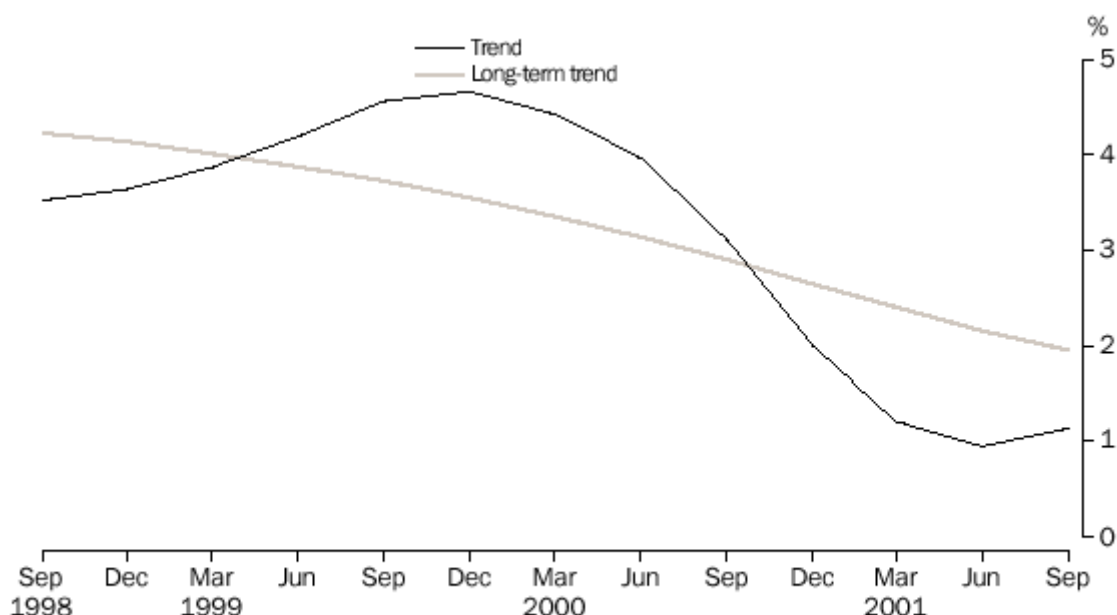
Real interest rate

Note: The real interest rate is defined as the difference between nominal interest rates and the change in the domestic final demand chain price index.

The XCLI uses the inverse of the business cycle in the real interest rate, lagged four quarters. Therefore, it is the December quarter 2000 movement of the real interest rate that contributes to the December quarter 2001 movement in the XCLI. Following six quarters of negative contributions to the XCLI, the real interest rate component made a positive contribution (0.12) to the change in the XCLI in the December quarter 2001.

The trend of the real interest rate rose in the September quarter 2001 ending a six quarter fall. The long-term trend continued to decline over the period, hence the real interest rate component should continue to make positive contributions to the change in the XCLI through to the June quarter 2002.

GRAPH 10. REAL INTEREST RATE



Source: ABS (Cat. no. 5206.0) and Treasury.

Production and business expectations

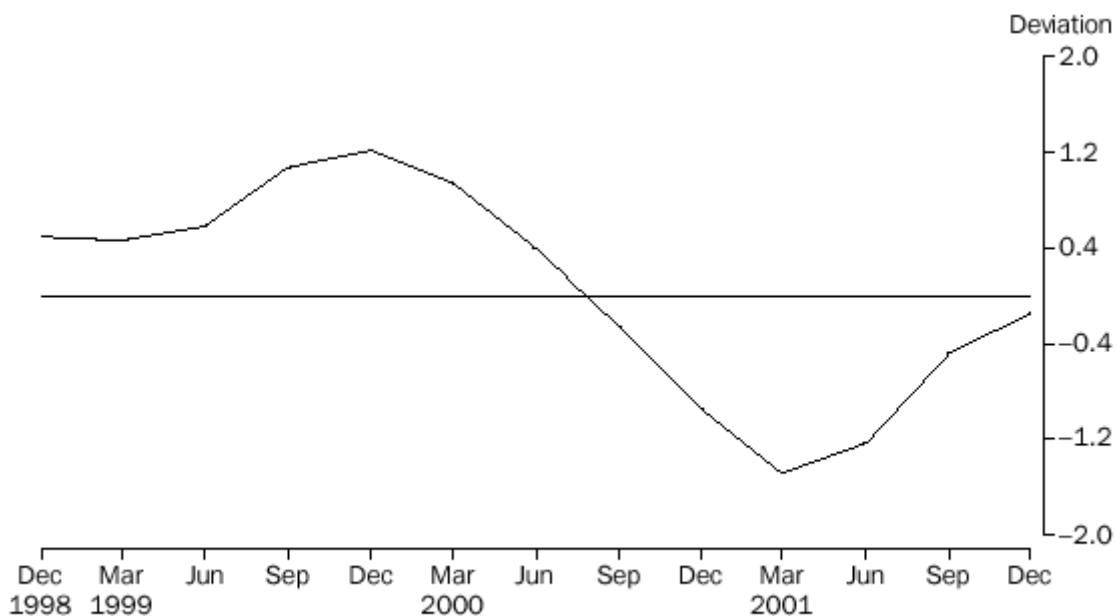
Note: These components are lagged one quarter in the compilation of the XCLI. Like other XCLI components, the production expectations and business expectations series have been smoothed and standardised to display cyclical behaviour. However, these series are not considered to exhibit long-term trend growth.

In the December quarter 2001, the trend of production expectations rose for the third consecutive quarter. According to the Survey of Industrial Trends (produced by ACCI and Westpac Banking Corporation), production expectations in original terms were up strongly in December quarter 2001. Because this component is lagged one quarter, it was the rise in the September quarter 2001 that made a positive contribution in the change in the XCLI in the December quarter 2001 (0.08). This component is expected to also make a positive contribution for March quarter 2002.

In the December quarter 2001, the trend of business expectations fell slightly following rises in the previous three quarters. According to the December quarter 2001 Survey of Industrial Trends there was a decrease in business expectations in original terms. Because this component is lagged, it was the increase in business expectations in the September quarter 2001 that made a positive contribution to the change in the XCLI in the December quarter 2001.

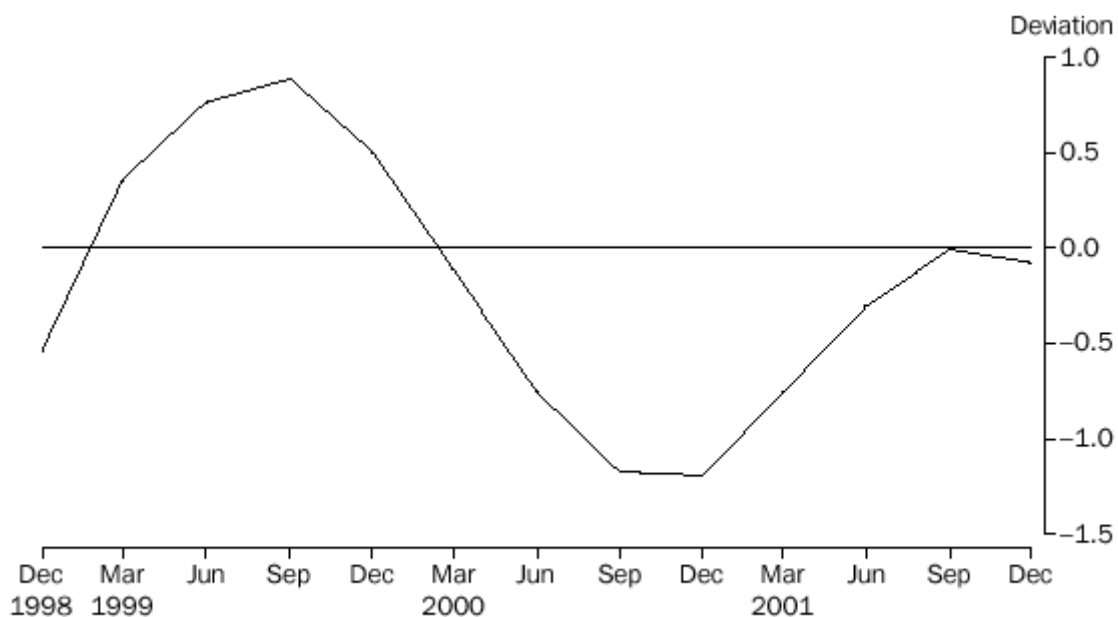
Note: The source of these expectations series is the Australian Chamber of Commerce and Industry, and Westpac Banking Corporation, Survey of Industrial Trends. The ABS also compiles business expectations data. However, the ABS data cannot yet be included as a component of the XCLI due to the insufficient length of the time series.

GRAPH 11. PRODUCTION EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

GRAPH 12. BUSINESS EXPECTATIONS, Trend



Source: ACCI and Westpac Banking Corporation, 'Survey of Industrial Trends'.

LONGER TIME SERIES AND FURTHER DETAILS

Details of the compilation of the XCLI index can be found in An Experimental Composite Leading Indicator of Australian Economic Activity, (ABS Cat. no. 1347.0), released in June 1993, and in the feature articles published in Australian Economic Indicators (ABS Cat. no. 1350.0) in August and October 1992 and May 1993.

Longer time series of the data presented in this XCLI article are now available on AUSSTATS. For further information about these statistics please contact Jo Jackson on Canberra (02) 6252 6114.

ENDNOTE

The unit of measurement varies between XCLI components. For example, the real interest rate is measured as a percentage, job vacancies as a number, United States GDP in dollar terms and the trade factor is measured in index number form. Each component is therefore standardised to make its contribution to the XCLI comparable.

The standardisation procedure gives each XCLI component an average value of 1. The variation of each component about its average is also standardised, so that the average deviation also equals 1. Chain volume GDP (the reference series) is also standardised in the same way.

Graphs 1 and 3 use the standardised forms of the XCLI, GDP and non-farm GDP series. The graphs show the deviation of the standardised series from their respective historical long-term trends. Because of the standardisation procedure, the deviation measure has no particular unit (i.e. it is not measured in dollars, or percentage change, or any other real world unit).

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